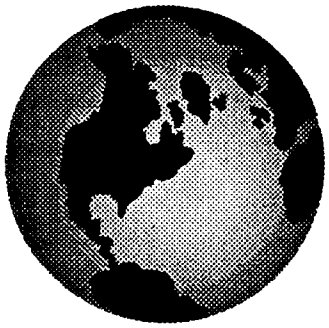
SFPE
BULLETIN
November/December 1994

FORUM FOR INTERNATIONAL COOPERATION ON FIRE RESEARCH
1994 ANNUAL REPORT

INTRODUCTION

This is the first annual report of the activities of the FORUM and therefore briefly reviews FORUM activities to date. The intent is that these reports will be issued as soon as practical after the FORUM's annual meeting as a means to disseminate information and solicit comment. As such, these reports may be freely distributed. Comments on any of the issues addressed herein or suggestions on priorities for research may be directed to the chair or any of the FORUM members.



BACKGROUND

The 1994 meeting held in Ottawa, Canada, was the seventh since the FORUM was organized. Each meeting is hosted at a member's facilities to foster familiarity with facilities and staff, and to facilitate collaborative research efforts. Further, since 1992, the meeting has an associated symposium on a topic of current interest which allows members and invited guests to exchange the latest technical information with researchers in the host country. As the 1994 meeting was held in conjunction with the Fourth International Symposium on Fire Safety Science, no FORUM symposium was held.

The first organizational meeting of the FORUM was in 1988 in conjunction with a conference jointly sponsored by the Society of Fire Protection Engineers and the Center for Fire Research (now part of the Building and Fire Research Laboratory at NIST) on the application of fire research, and was held in Gaithersburg, Maryland, USA.

Following this meeting, a number of groups were solicited for inputs on fire research needs requiring international cooperation as preparation for the 1989 meeting at Brandforsk, in Stockholm, Sweden. At the Stockholm meeting, there was a strong consensus of participants to direct resources towards development of scientifically-based tools of "Fire Safety Engineering" (FSE) as a means of reducing the limitations of restrictive, prescriptive standards and codes thus enabling optimum use of scarce fire protection resources. FSE has become the goal of much of the world's research activities and has been a central topic at each of the FORUM meetings and symposia.

A principal topic of attention at the FORUM's 1990 meeting at the Fire Research Station, Borehamwood, England, was emerging fire test methods. The 1991 FORUM meeting was held at Factory Mutual Research Corporation in Norwood, Massachusetts, USA, where discussions focused on a number of current topics including the Kuwait oil fires and validation of fire models. At this meeting, the FORUM agreed members should join and support inFIRE (the association of the world's fire libraries) and to begin to hold technical symposia in conjunction with annual FORUM meetings.

The 1992 meeting and the first international conference was hosted by CSIRO in Sydney, Australia. The symposium topic was *Fire Safety Engineering – The Concept and the Tools*. In 1993 the meeting and symposium was held at VTT in Espoo, Finland, where the Nordic Fire Safety Engineering Symposium topic was *Development and Verification of Tools for Performance Codes*.

FORUM ACTIVITIES

One of the first FORUM activities was a survey of available computer models for fire and smoke. Compiled by Dr. Ray Friedman of Factory Mutual Research Corporation, the first edition was published in 1989 with descriptions of 35 models. A second edition was produced in 1991 which included 62 models, presenting concise descriptions of the phenomena covered, hardware requirements, and availability.

In 1991, the FORUM award was instituted, to be presented in conjunction with the International Association for Fire Safety Science Symposium held every three years. This award, consisting of a plaque and US$5000 honorarium is for "outstanding contribution to the science of fire safety or an advance in the state-of-the-art in fire safety engineering practice of extraordinary international significance."

The FORUM is an informal group of heads of fire research organizations throughout the world. Its aim is to reduce the burden of fire (including loss of life and property, and effect of fire on the environment and heritage) through international cooperation on fire research.

The first award, presented in Ottawa, went to the pioneers of fire safety engineering education at Science University of Tokyo, Edinburgh, Lund, Worcester Polytechnic Institute, and University of Maryland.

An important goal of the FORUM is to facilitate the interchange of information. Research reports are circulated among members and the symposia bring together scientists doing the work. Support for inFIRE encourages access to members' library collections, which has led to significant improvement in the completeness of literature reviews. Cooperative development of databases on current research projects and on data for models and calculations is being pursued. FORUM members from Australia, the United Kingdom, and the United States are cooperating to translate the (4-volume) *Japanese Comprehensive Method of Fire-Preventive Design*, the basis for quantitative determination of equivalency to their national code, into English for worldwide distribution.

A major FORUM goal is to foster cooperative research projects among many members, and several such efforts have been undertaken by pairs of members. FORUM's long-standing interest in developing the practice of fire safety engineering was again apparent at Ottawa where Wolfram Becker, chairman of ISO TC92/SC4, and Matti Kokkala, new coordinator of CIB W14, were invited to attend and join a discussion of these activities. The discussion focused on a major project on the development of harmonized methods for fire risk assessment which has been organized under CIB W14. Chaired by NIST, the activity involves representatives of 15 countries, of which 12 are FORUM members. The resulting methods would be considered for international standards through the ISO committee. Other topics of potential collaborations include smoke movement and control, model validation, and open systems architecture for fire models.

To focus their coordination activities, work has begun on a strategic plan for the FORUM. Drawing from the strategic plans of the member organizations, this plan will identify priorities and opportunities for cooperative activities that will advance these priorities on a clear schedule. At the Ottawa meeting, the following list of "hot" topics was produced.

RESEARCH ISSUES OF PRIMARY CONCERN TO MEMBERS

1. Development of fire safe materials and products.
2. Application of advanced technology to fire protection technology components and systems.
3. Cost effectiveness of fire protection measures.
4. Human behavior in fire and fire prevention.
5. Advanced technologies for fire management and control.
6. Life cycle performance/reliability of fire protection measures.
7. Environmental impacts of fire.
8. Fire protection of advanced manufacturing facilities.
9. Urban/wildland interface.
10. Hazardous materials.
11. Fires following earthquake.
12. Fire safety for developing nations.
13. Hazards of contaminated land.
14. Heritage/historic building fire safety.
15. Forest fires.
16. Fire incident statistics in developing nations.
17. Application of advanced information technology, etc. to motivating fire prevention.
18. Ergonomic design of firefighter equipment.
19. Acceptable levels of fire safety:
    - quantifying
    - communication and acceptance
20. Fire safety for advanced building technology.
21. Fire risk/hazard labeling of buildings.

Typically, these issues are each of interest to more than one member, and addressing them generally reaches far beyond the available resources of any single laboratory.

INTERACTION WITH FORUM

The FORUM welcomes suggestions, comments, and ideas. These can be directed to the chair or secretary at NIST, or to any FORUM member. Suggestions of research topics or issues that the FORUM should address are especially welcome now as input to the development of a strategic plan.

Nominations for the FORUM award to be

Richard W. Bukowski, P.E.
FORUM Secretary
Building and Fire Research Laboratory
Room B250
NIST
Gaithersburg, MD 20899 USA
301 975 6853
301 975 4032 (fax)
RBUKOWSKI@nist.gov (e-mail)

presented at the next (1997) IAFSS symposium may be made at any time.

Institute Data Sheets which describe current research projects, staffing and resource allocations are being collected from participants. These will be made available by CSIRO (Australia) through their Gopher server on the INTERNET once some security issues are resolved. A beta test of FDMS, a database of fire performance data for models, is expected to begin by the end of the year. The catalog of fire models is available on request to the chair or directly to FMRC in Norwood, Massachusetts, USA. When completed, (likely January 1995), the four volume Japanese translation will be available on request from NIST.

Current FORUM members are the Building and Fire Research Laboratory in the United States (chair), Tianjin Fire Research Institute in the Peoples Republic of China, Fire Technology Program at CSIRO in Australia, the Technical Research Centre of Finland, Factory Mutual Research Corporation in the United States, the Building Research Institute in Japan, ITSEMAP FUEGO in Spain, the Norwegian Fire Research Laboratory, the National Research Council of Canada, the Fire Defence Agency in Japan, the Central Building Research Institute in India, the University of Science and Technology of China, the Swedish National Testing and Research Institute, and the Fire Research Station in the United Kingdom.

For information on membership in the FORUM, please contact J. Kenneth Richardson at NRC Canada.

INTERNATIONAL CONFERENCE ON FIRE RESEARCH AND ENGINEERING

The call for papers for this joint effort of NIST's Building and Fire Research Laboratory and SFPE has been issued and was enclosed with the September/October *SFPE Bulletin*. The deadline for submission is 1 February 1995. Papers which relate research to practice are particularly encouraged.

Papers are invited from, but not limited to, the following areas:

Performance-based fire safe design (analytical methods and case studies related to flammability, egress, and/or structural fire protection);

Computer-based fire growth modeling (advances, experience);

Risk assessment hazard analysis (new techniques, application of advanced methods);

Fire dynamics (ignition, flame spread, compartment fires, smoke transport);

Forensic applications of fire engineering (application of analytical methods and procedures to fire reconstruction and litigation);

Suppression and detection systems (new technologies, theoretical developments, advanced engineering methods);

Smoke control (system design and hardware, reliability, experience, calculation methods);

Industrial fire protection (new developments in hazard assessment, mitigation, studies of industrial fires);

Explosions and explosion suppression (new technologies, calculation methods, reliability, performance);

Urban-wildland interface (theoretical models, recent developments, experience).

Full details about the venue, registration fees and hotel accommodations will be available in the Spring 1995.